

Claims

1 Sub 1
2 1. An integral machine for polishing, cleaning, rinsing and drying workpieces comprising:
3 a load/unload station having a plurality of platforms for receiving cassettes of workpieces to
4 be polished, cleaned, rinsed and dried;
5 first transfer means for retrieving said workpieces from said cassettes;
6 an index station for receiving unpolished workpieces from said first transfer means and for
7 holding polished workpieces prior to further processing;
8 a polishing station for polishing unpolished workpieces;
9 second transfer means for transferring unpolished workpieces from said index station to said
10 polishing station, and for transferring polished workpieces to said index station;
11 a cleaning station for cleaning, rinsing and drying polished workpieces;
12 third transfer means for transferring polished workpieces from said index station to said
13 cleaning station; and
14 fourth transfer means for transferring cleaned, rinsed and dried workpieces from said cleaning
station back to said cassettes.

2. A machine as claimed in claim 1, wherein said first and fourth transfer means are
incorporated into one robot.

3. A machine as claimed in claim 2, wherein said first transfer means comprises a dry end-
effector.

1 4. A machine as claimed in claim 1, wherein said index station comprises an index table
2 having load cups for holding said unpolished wafers and unload cups for holding said polished
3 wafers.

1 5. A machine as claimed in claim 4, wherein said second transfer means comprises a
2 movable apparatus having carrier elements which retrieve said unpolished wafers from said load
3 cups; press said unpolished wafers against a polishing pad in said polishing station; and return said
4 polished wafers to said unload cups.

6. A machine as claimed in claim 5, wherein said third transfer means comprises a flipper
which moves said polished wafers from said unload cups of said index table to said cleaning station.

7. A machine as claimed in claim 1, wherein said cleaning station comprises a plurality of
scrub stations, a rinsing station and a drying station.

8. A machine as claimed in claim 7, wherein said wafers are moved between said scrub
stations and said rinsing station along a plurality of water tracks.

9. A machine as claimed in claim 8, wherein said first and fourth transfer means are
incorporated into a dry end-effector of a robot, and said wafers are moved from said rinsing station
to said drying station by a wet end-effector of said robot.

10. A machine having a first station for loading and unloading semiconductor wafers to and
from wafer cassettes, a second station for polishing said wafers, a third station for cleaning, rinsing
and drying said wafers, and means for transferring said wafers between said first, second and third
stations.

11. A method for processing workpieces comprising the following steps:
providing a workpiece to be polished, cleaned, rinsed and dried
transferring said workpiece with a robot from a load/unload station to a polishing station;

4 polishing said workpiece;
5 transferring said workpiece from said polishing station to a cleaning, rinsing and drying
6 station;
7 cleaning, rinsing and drying said workpiece; and
8 transferring said workpiece with said robot from said cleaning station back to said
9 load/unload station.

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